



NUCLEAR REGULATORY COMMISSION

[NRC-2022-0215]

Material Compatibility for non-Light Water Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Draft interim staff guidance; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing for public comment on its draft Interim Staff Guidance (ISG) "Material Compatibility for non-Light Water Reactors, DANU-ISG-2023-01." The purpose of this draft ISG is to assist the NRC staff in reviewing certain applications for construction and operation of non-light water reactor designs, including power and non-power reactors.

DATES: Submit comments by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received before this date.

ADDRESSES: You may submit comments by any of the following methods; however, the NRC encourages electronic comment submission through the **Federal rulemaking website**:

- **Federal rulemaking website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2022-0215**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individuals listed in the "For Further Information Contact" section of this document.

- **Mail comments to:** Office of Administration, Mail Stop: TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Program Management, Announcements and Editing Staff.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Meg Audrain, telephone: 301-415-2133, email: Margaret.Audrain@nrc.gov and Jordan Hoellman, telephone: 301-415-5481, email: Jordan.Hoellman2@nrc.gov. Both are staff of the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID **NRC-2022-0215** when contacting the NRC about the availability of information for this action. You may obtain publicly available information related to this action by any of the following methods:

- **Federal Rulemaking Website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2022-0215**.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to PDR.Resource@nrc.gov. The draft ISG, “Material Compatibility for non-Light Water Reactors, DANU-ISG-2023-01” is available in ADAMS under Accession No. ML22203A175.

- **NRC’s PDR:** You may examine and purchase copies of public documents, by appointment, at the NRC’s PDR, Room P1 B35, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-

4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

B. Submitting Comments

The NRC encourages electronic comment submission through the **Federal rulemaking website** (<https://www.regulations.gov>). Please include Docket ID **NRC-2022-0215** in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <https://www.regulations.gov> as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

II. Background

As part of its review of advanced non-light water reactor applications, the NRC determines whether materials proposed to be used will allow components to fulfill design requirements for the design life, or that adequate surveillance and monitoring programs are in place. NRC regulations in part 50 and part 52 of title 10 of the *Code of Federal Regulations* (10 CFR) include requirements for material qualification and performance monitoring. The NRC endorsed American Society of Mechanical Engineers (ASME) Code Section III, Division 5, “High Temperature Reactors” (Section III-5), with conditions, in Revision 2 of Regulatory Guide 1.87, “Acceptability of ASME Code, Section III, Division 5, ‘High Temperature Reactors,’” (ADAMS Accession No. ML22101A263).

III. Discussion

The purpose of this draft ISG is to aid the NRC staff reviewing non-light water reactor applications for a construction permit or operating license under 10 CFR part 50 or for a design certification, combined license, standard design approval, or manufacturing license under 10 CFR part 52 that propose to use materials allowed under Section III-5. Section III-5 specifies the mechanical properties and allowable stresses to be used for design of components in high temperature reactors. Because Section III-5 states that it does not provide methods to evaluate deterioration that may occur in service as a result of corrosion, mass transfer phenomena, radiation effects, or other material instabilities, this draft ISG identifies information that the staff should consider as part of its review of a non-light water reactor application to review applicable design requirements including qualification and monitoring programs for safety-significant structures, systems, and components.

Dated: March 1, 2023.

For the Nuclear Regulatory Commission.

Steven T. Lynch,

Chief,

Advanced Reactor Policy Branch,

Division of Advanced Reactors and

Non-Power Production and Utilization Facilities,

Office of Nuclear Reactor Regulation.

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